

THE ORIGIN OF PLANT LIFE ON LAND. Thalassiphyta and the Subaerial Transmigration.

By A. H. Church. (Botanical Memoirs, No. 3.) Pp. 95. (London: Oxford University Press, 1919.) Price 3s. 6d. net.

MR. CHURCH has produced a very serious contribution to the discussion of the sources of plant life on land. No one interested in this question can neglect his work. The statement is attributed to Weismann that the birthplace of all animal and plant life lies in the sea. Mr. Church circumscribes that thesis in his opening words, "The beginnings of botany are in the sea"; and his essay has as its object to demonstrate that the land flora originated, as the primal land-surfaces rose gradually above the ocean, from a marine flora already fixed upon its shores. He designates as "Thalassiphyta" the whole of the salt-water vegetation, and as "Xerophyta" the whole of the land flora. The former he divides again into Plankton and Benthos, pointing out that Plankton responds to the single factor of water, Benthos to the two factors of water and substratum, while Xerophyton responds to the three factors of water, substratum, and air. His main thesis is that the last was derived from the higher types of Benthos. "Processes of conduction and absorption involving roots and tracheides are initiated, and such departures superimposed on a seaweed soma." "The tetraspores of the sea become 'homosporous,' air-dried, and wind-borne" (p. 44).

Thus the evolution of a land flora was a phase of transition *in situ* rather than involving a preliminary landward migration, *via* fresh water. The successful trans migrant algæ of the first land migration combined the best and highest factors of marine equipment, as illustrated in many surviving groups. At the outset Mr. Church separates the problem of this migration from the origin of a cytological cycle, maintaining that the latter was already established before the migration took place. For these conclusions argument is produced rather than fact; indeed, there appears to be no new body of fact in the whole memoir. The author remarks incidentally that homoplasy and convergence have been much neglected. We agree; but may not they explain much of what he interprets as evidence of a direct migration?

Two serious omissions appear in the memoir. There is no reference to the important discoveries of Lower Devonian fossils in the Rhynie Chert, though the description of Rhynia was published early in 1917. Kidston and Lang give positive fact as to the structure of one of the earliest known land-plants; and secure fact is worth a vast

amount of surmise and argument. Nor does Mr. Church refer to the question of transference of the tetrad-division in the course of descent to a fresh position in the life-cycle, though Svedelius had raised that question in 1916, and adduced facts very pertinent to it. Such facts, and the arguments that may be based upon them, might, if they had been taken into account, have materially affected Mr. Church's statements.

Notwithstanding such omissions, the memoir is a real contribution to morphological thought. It may be that Mr. Church has over-accentuated the directness of the origin of land-plants from marine forms. But he has carefully protected himself by saying that "no Phæophycean or Floridean passed on to higher autotrophic land-flora" (p. 42). The cautious philosopher, while sympathising with Mr. Church's general thesis, would probably prefer to give greater elasticity to it, seeing in the modern marine flora suggestions upon which to base hypotheses rather than those blunt statements of conclusion which find their place in Mr. Church's pages. However that may be, the effect of "Thalassiphyta" will be to direct attention, which was already swinging that way, more definitely towards marine rather than to fresh-water algæ, as a probable source of land vegetation. Though some of Mr. Church's conclusions may not find wide acceptance, the memoir is the most thoughtful contribution to the question in recent years, and it is full of originality and of interesting though bluff criticisms. F. O. B.

NORMAL AND MORBID PSYCHOLOGY.

Mind and its Disorders: A Text-book for Students and Practitioners of Medicine. By Dr. W. H. B. Stoddart. Third edition. (Lewis's Practical Series.) Pp. xx+580. (London: H. K. Lewis and Co., Ltd., 1919.) Price 18s. net.

A REVIEW of the new edition of this well-known text-book is justified by extensive modifications corresponding to the author's conversion to the doctrines of Freud. The volume contains in 572 pages an account of normal and morbid psychology—including the tracing of all mental processes in psychological terms to their original elements and their correlation with their neural equivalents—of the clinical forms of all the neuroses and psychoses and their investigation and treatment, of the diseases to which the insane are specially liable, and of the legal relations of insanity.

Most modern problems in all these subjects are touched upon, and the book provides the sort of knowledge required by the student and general practitioner and a starting point from which the

serious study of one of these branches might be begun.

Necessarily the accounts given are summary, and perhaps dogmatism is also necessary, but some of the matter included might give way to at least a brief statement of the other side of the case. The enunciation of the James-Lange theory of emotion at the present day without reference to any opposition except a footnote controverting deductions from Sherrington's dog is somewhat misleading.

A similar lack of proportion in what is intended to be a text-book is noticeable throughout. Undue prominence is given to observations and theories in which the author is specially interested, but which are by no means universally accepted. As a single example, three pages are devoted to the enumeration of many specific tendencies and actions as separate instincts, some of which it would be very difficult to bring within any modern definition of instinct known to the present writer. On the other hand, there is no reference to McDougall's grouping of such actions under a limited number of heads as instincts with associated emotions. The usefulness of the latter concept is sufficiently widely recognised to deserve mention.

Dr. Stoddart, in his adherence to the doctrine of Freud, shows all the devoutness of the convert. He accepts the literal truth of the whole gospel, including such generalisations as that dreams are invariably distorted wish fulfilments, and that neuroses and psychoses are without exception the results of repression of sexual impulses.

Surely the battle dreams of the war neuroses have rendered the former statement untenable except by the exercise of the most perverse ingenuity. As to the second, the employment of the usual evasion that Freud and his followers use the term "sexual" in a much wider sense than is usual renders discussion meaningless. The sexual instinct is not a phenomenal reality, but a concept; the extent to which it is useful to group observed phenomena of conduct under the term is a question, not of fact, but of opinion. However, in practice Dr. Stoddart, like other extreme exponents, refers all abnormalities of thought and conduct to the crudest anomalies of this instinct in its narrowest sense.

The reviewer accepts most of Freud's description of the manner in which thinking is distorted by "complexes" in the normal and the neuropath, in dreams and similar states. But he failed to repress a smile on comparing two statements in this book, first, that in psycho-analysis suggestion is most scrupulously avoided, and secondly, that with sufferers from anxiety neurosis, terrified by an air raid, the most superficial analysis—presumably

to elicit the meaning of the terror—revealed the phallic significance in their minds of Zeppelins, aeroplanes, and bombs! It is the ill-concealed satisfaction of the psycho-analyst with this type of association that evokes them.

The description of the clinical forms of the neuroses and psychoses is excellent apart from a few examples of the disproportion and excessive dogmatism referred to. But with the author's change of views it requires more careful revision to render it consistent.

ASPECTS OF MODERN SCIENCE.

The Realities of Modern Science: An Introduction for the General Reader. By John Mills. Pp. xi+327. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1919.) Price 10s. 6d. net.

Modern Science and Materialism. By Hugh Elliot. Pp. vii+211. (London: Longmans, Green, and Co., 1919.) Price 7s. 6d. net.

(1) **T**HE first of these works is evidently that of an enthusiastic scientific student, rather than teacher, who has found the systems of school and college instruction in physical science prevailing in America unsatisfactory. He desires, commendably enough, to see them replaced by courses based fundamentally upon the modern conceptions which have been arrived at only within the last two or three generations, not only for the few specialist, but also for general, students. This praiseworthy motive is, however, not likely to be much furthered by the book under notice. The author would have done better to write a book for science teachers and to assume throughout a knowledge equal to that obtainable from the despised college courses. As it is, it is difficult to understand for whom exactly the book is intended. In the first half the reader is assumed to be the veriest tyro in science, and there is much gilding of the philosophic pill. The beginnings of knowledge, of machinery, and of experimentation, weights and measures, the molecular theory, the "realities of science," electrons, the nucleus and energy are discussed rather desultorily. Then follow three chapters on the most obvious and elementary algebra, to which the non-mathematical reader is advised to give only cursory and mechanical reading in order to reach the second part of the book.

Then the author lets himself go. The reader is absolutely forgotten, or at least he must have had, in an interim, the advantage of several years of serious study of science sufficient to enable him to understand, if not to profit by, the particular parts of the last half-century's advances in physics,